Executive Summary

ENERGY SURVEY OF ARMY DINING FACILITIES FORT CARSON, COLORADO

Prepared For:

U. S. Army Corps of Engineers

Omaha District

Prepared By:

Farris Engineering Incorporated

650 First Street

Colorado Springs, CO 80907

In Conjunction With:

Wells Engineering, Incorporated

11237 Chicago Circle

Omaha, NE 68154

October 31, 1990

DEPARTMENT OF THE ARMY
CONSTRUCTION ENGINEERING RESEARCH LABORATORIES, CORPS OF ENGINEERS
P.O. BOX 9005
CchampaIGN, ILLINOIS 61826-9005

REPLY TO
ATTENTION OF: TR-I Library

17 Sep 1997

Based on SOW, these Energy Studies are unclassified/unlimited.
Distribution A. Approved for public release.

Marie Wakefield,
Librarian Engineering

FINAL SUBMITTAL

ENERGY SURVEY OF ARMY DINING FACILITIES
FORT CARSON, COLORADO

TABLE OF CONTENTS

(8003-2)

TABLE OF CONTENTS (Continued)

LIST OF TABLES AND CHARTS

LIST OF TABLES AND CHARTS (Continued)

1.0 EXECUTIVE SUMMARY

1.1 INTRODUCTION. This project consists of performing an energy survey on eight dining facilities located at Fort Carson, Colorado. During January 1989, the architectural, electrical, and HVAC systems for each dining hall were surveyed and evaluated. Energy Conservation Opportunities (ECOs) were developed, analyzed, and recommended based on information gathered during the surveys. Fort Carson can achieve an 18 percent reduction in energy use for these eight buildings with an annual savings of $18,085.00 if recommended ECOs are implemented.

1.2 BUILDING DATA. The buildings surveyed are shown in Table 1.1.

TABLE 1-1 BUILDING DESCRIPTION

Building Number	Description
1040	68th Trans Bn Dining Hall
1117	704th Spt Bn (Brks) Dining Hall
1369	HHB, DIVARTY Dining Hall
1669	HHC, 2d Bde Dining Hall
2061	HHC, 3d Dining Hall
2461	2/7th Cav Dining Hall
6250	NCOA (N) Dining Hall
9612	Butts Airfield Dining Hall

All eight dining halls are single story buildings. Buildings 1040, 1369, and 1669 are identical in their floor plan. Buildings 2061 and 2461 are the only two buildings mechanically cooled. Building 9612 has the smallest floor area of the dining halls. A listing of the building areas are shown in Table 1-2.

TABLE 1-2 BUILDING AREAS

Building Number	Area
1040	11,300 s.f.
1117	4,657 s.f.
1369	11,300 s.f.
1669	11,300 s.f.
2061	15,409 s.f.
2461	16,829 s.f.
6250	21,797 s.f.
9612	4,720 s.f.

1.3. PRESENT ENERGY CONSUMPTION. The Data depicting present energy consumption represents information obtained from the Building Load Analysis and System Thermodynamic (BLAST) program. Each of the dining halls was modeled using the BLAST program. Individual metering of the dining halls at

Fort Carson for gas, electric, and water consumption is not done; therefore, past utility records do not exist and cannot be used to verify the BLAST results.

1.3.1. Total Annual Energy Used. The total energy used during a year for each dining hall as modeled by BLAST is shown in Table 1-3.

TABLE 1-3 ANNUAL ENERGY CONSUMPTION

Building Number	Energy Consumption Btu/Yr	Energy Consumption Btu/s.f./Yr
1040	1.5861×10^9	73,980
1117	0.5204×10^9	106,400
1369	1.6796×10^9	78,340
1669	1.5593×10^9	72,730
2061	2.0917×10^9	106,500
2461	1.9014×10^9	94,880
6250	1.4024×10^9	63,950
9612	0.2861×10^9	61,630
TOTAL	11.0270×10^9	

1.3.2. Source Energy Consumption.

1.3.2.1. Electricity. Table 1-4 provides yearly electrical energy use, cost, and the Btu/Year equivalents by building. This information was obtained from the BLAST run for each building.

TABLE 1-4 ELECTRICAL ENERGY USE, COST, AND BTU/YR EQUIVALENT

Building Number	KWH x 10^6	Btu/Yr x 10^6 Equivalent	Cost ($)
1040	92.0	313.8	3,678
1117	55.9	190.9	2,237
1369	92.0	313.8	3,678
1669	92.0	313.8	3,678
2061	311.5	1,063.0	12,458
2461	283.3	966.5	11,327
6250	88.3	301.2	3,530
9612	21.3	72.8	853
TOTALS	1,036.5	3,535.8	$41,439

Average Yearly Cost for Electricity is \$11.72/Btu x 10^6

1.3.2.2. Natural Gas. Table 1-5 summarizes the annual natural gas consumption and cost by building. This data was obtained from the BLAST run for each dining hall.

TABLE 1-5 NATURAL GAS USE AND COST

Building Number	Btu/Yr x 10^6	Cost ($)
1040	1,272.0	5,724
1117	329.3	1,489
1369	1,366.0	6,147
1669	1,245.0	5,603
2061	1,029.0	4,631
2461	935.1	4,208
6250	1,101.0	4,955
9612	213.4	960
TOTALS	7,490.8	$33,717

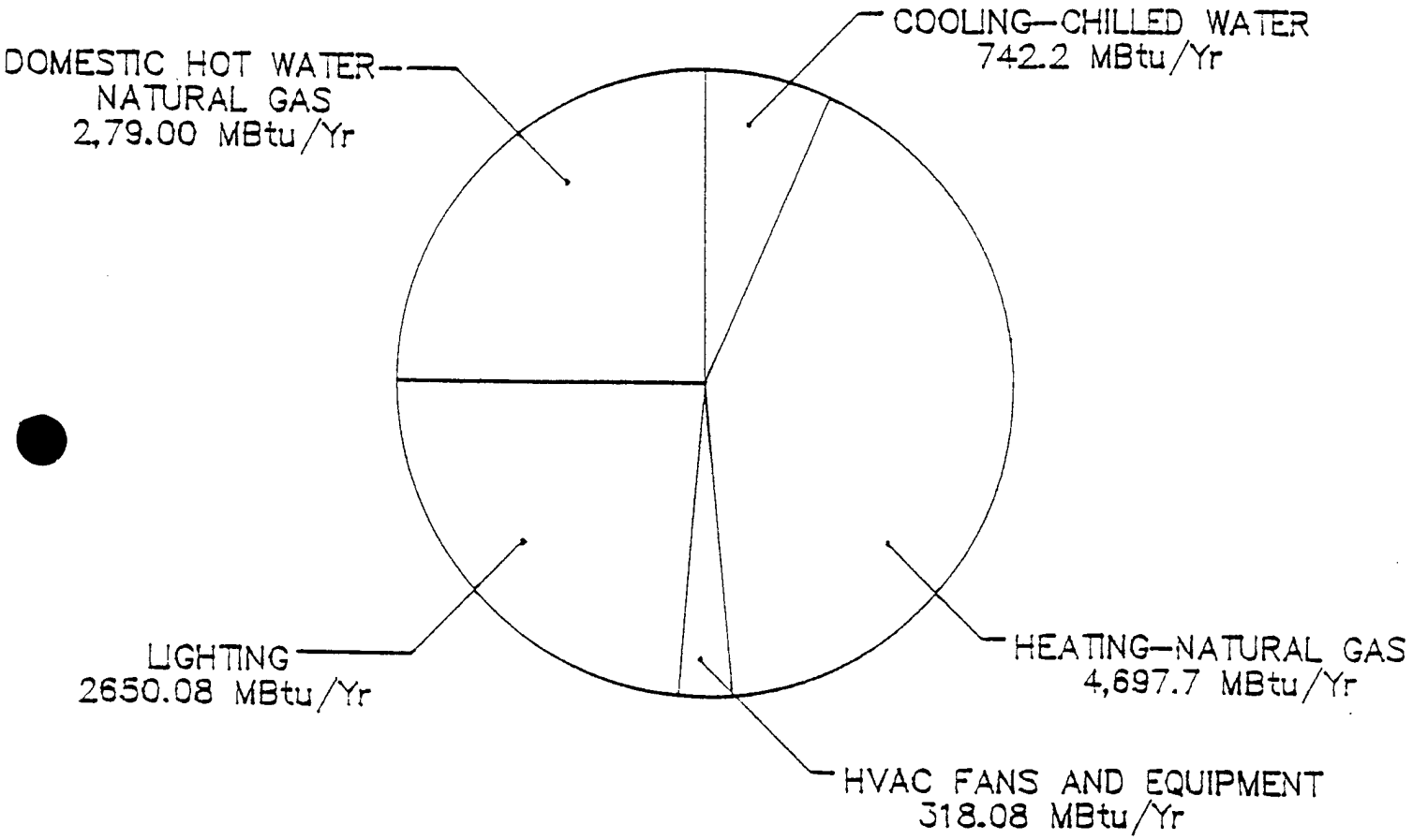
Average Yearly Cost for Natural Gas is $4.50/Btu x 10^6

1.3.3. Energy Consumption by Systems. Refer to Table 1-6 for a breakdown of the dining halls' energy consumption by systems. This information was obtained from the BLAST run for each building. Refer to Chart 1-1 for a breakdown of the energy consumption totals for the eight dining halls.

TABLE 1-6 ENERGY CONSUMPTION BY SYSTEM

Building Number	Lighting MBtu/Yr	HVAC Fans & Equipment MBtu/Yr	Heating Natural Gas MBtu/Yr	Cooling Chilled Water MBtu/Yr	Dom Hot Water Natural Gas MBtu/Yr
1040	271.5	42.3	895.2	0	377.12
1117	182.2	8.7	33.0	0	296.30
1369	271.5	42.3	895.2	0	470.50
1669	271.5	42.3	895.2	0	350.18
2061	681.6	97.6	433.1	510.0	596.00
2461	614.0	69.1	468.2	232.2	466.90
6250	290.9	10.3	950.6	0	150.80
9612	67.6	5.48	127.2	0	86.20
TOTALS	2,650.8	318.08	4,697.7	742.2	2,794.00

CHART 1-1 TOTAL ENERGY CONSUMPTION BY SYSTEM FOR THE EIGHT DINING HALLS. TOTAL CONSUMPTION: 11,202.78 MBtu/Yr



1.4. **HISTORICAL ENERGY CONSUMPTION.** Individual building utility meters are not used at Fort Carson to record energy consumption. Utility meters serving the post as a whole are used to meter the utilities. Without individual building utility meters, information on past energy consumption at the eight dining halls is not available.

1.5. **ENERGY CONSERVATION ANALYSIS.**

1.5.1. **Energy Conservation Opportunities Investigated.** Fifty-seven energy conservation opportunities (ECOs) were investigated at each of the eight dining halls (456 total) for reducing energy consumption. Nineteen of these ECOs were determined to have potential for reducing energy at one or more of the dining halls and were evaluated further. Refer to Table 1-7 for a list of all the ECOs investigated and those determined to be potentially applicable.

TABLE 1-7 EVALUATION OF ENERGY CONSERVATION OPPORTUNITIES*

Energy Conservation Opportunities	Applicable	Not Applicable
Insulation (wall and roof)	X	
Insulated glass or storm windows	X	
Weather stripping and caulking		X
Solar film	X	
Drapes or blinds	X	
Insulated panels	X	
Vestibules		X
Glass area reduction	X	
Lower domestic hot water temperature	X	
Booster heaters at hot water users		X
Instantaneous hot water heaters		X
Insulate domestic hot water piping and storage tanks	X	
Install water flow restrictors	X	
Reclaim waste heat for domestic hot water	X	
Shut down energy or modify controls on water heater		X
Reduce hot water demand		X
Change water heater fuel type		X
Install night setback thermostats		X
Install HVAC economizer cycle		X
Upgrade HVAC controls		X
Make HVAC operations more efficient (night shutdown)		X
Install occupancy sensors to control HVAC		X
Interlock kitchen hood with kitchen equipment		X
Improve control zoning		X
Reset heating and/or cooling water temperature		X
Insulate heating water piping	X	
Recover waste heat from exhaust air		X
Repair steam traps		X
Pre-heat combustion air to boiler		X
Replace boiler controls		X
Install boiler oxygen controls		X
Pre-heat boiler feed water		X

TABLE 1-7 (Continued)

Energy Conservation Opportunities	Applicable	Not Applicable
Return condensate to boiler		X
Change boiler fuel type		X
Install infrared heaters		X
Provide thermal storage for cooling		X
Provide evaporative cooling		X
Provide water spray for cooling roof		X
Provide heat pumps to cool dining area and pre-heat domestic hot water		X
Reclaim heat from compressors to preheat domestic hot water		X
Change multizone system to VAV system	X	
Install air curtains at dock entrances		X
Install make-up air units for kitchen hoods		X
Install tight closing/low leakage dampers		X
Reduce/remove stratification		X
Insulate ductwork		X
Ventilate refrigerator/cooler compressor(s) room		X
Install energy saving lamps and ballasts	X	
Reduce lighting levels	X	
Replace incandescent lighting	X	
Use more efficient lighting source	X	
Occupancy sensors to control lights		X
Photocells to control exterior lights	X	
Timers to control lights	X	
Reflectors for fluorescent lights		X
Install switching and/or dimming	X	

*See pages 6-1 through 6-14 in regular report for more detailed explanation.

1.5.2. Energy Conservation Opportunities Recommended. More in-depth study of the potential ECOs and coordination with the post energy officer yielded 45 ECOs. These 45 recommended ECOs are presented in Table 1-8 according to the dining hall to which they apply. Seventeen of these ECOs apply to the mechanical systems and 28 to the electrical portion of the dining halls. None of these ECOs apply to the architectural aspect of the buildings.

TABLE 1-8 RECOMMENDED ENERGY CONSERVATION OPPORTUNITIES*

Building Number	Recommended Energy Conservation Opportunities
1040	1. Install Water Flow Restrictors
	2. Insulate Steam Condensate Piping
	3. Automatic Lighting Controls in Dining Area
	4. Replace Ballasts and Decrease Illuminance in Dining Area
	5. Insulate Domestic Hot Water Piping
	6. Replace Exterior Incandescent Fixtures
	7. Automatic Exterior Lighting Controls

TABLE 1-8 (Continued)

Building Number	Recommended Energy Conservation Opportunities
1117	1. Install Water Flow Restrictors 2. Lower Domestic Hot Water Temperature 3. Insulate Steam Condensate Piping 4. Automatic Lighting Controls in Dining Area 5. Replace Ballasts and Decrease Illuminance in Dining Area
1369	1. Install Water Flow Restrictors 2. Automatic Lighting Controls in Dining Area 3. Replace Ballasts and Decrease Illuminance in Dining Area 4. Replace Exterior Incandescent Fixtures 5. Automatic Exterior Lighting Controls
1669	1. Install Water Flow Restrictors 2. Automatic Lighting Controls in Dining Area 3. Replace Exterior Incandescent Fixtures 4. Replace Ballasts with Electronic Type 5. Automatic Exterior Lighting Controls
2061	1. Install Water Flow Restrictors 2. Automatic Lighting Controls in Dining Area 3. Lower Domestic Hot Water Temperature 4. Replace Ballasts with Electronic Type 5. Automatic Exterior Lighting Controls 6. Replace Exterior Incandescent Fixtures
2461	1. Lower Domestic Hot Water Temperature 2. Install Water Flow Restrictors 3. Remove Unused Exterior Incandescent Fixtures 4. Replace Mercury Vapor Downlights 5. Automatic Lighting Controls in Dining Area 6. Replace Ballasts with Electronic Type 7. Automatic Exterior Lighting Controls 8. Replace Exterior Incandescent Fixtures
6250	1. Lower Domestic Hot Water Temperature 2. Install Water Flow Restrictors 3. Automatic Lighting Controls in Dining Area 4. Replace Ballasts and Decrease Illuminance in Dining Area
9612	1. Install Water Flow Restrictors 2. Automatic Lighting Controls in Dining Area 3. Insulate Domestic Hot Water Tank 4. Replace Ballasts and Decrease Illuminance in Dining Area 5. Insulate Domestic Hot Water Piping

*See pages 6-5 through 6-14 in regular report for more detailed explanation.

1.5.3. Energy Conservation Opportunities Rejected. Several ECOs, 43 to be exact, were investigated thoroughly and rejected. The most prevalent reason for rejecting these ECOs was a savings investment ratio (SIR) less than one. The rejected ECOs with an SIR greater than one were not recommended for implementation because a similar ECO was selected over them. For example, "Revise Manual Lighting Controls" was rejected because "Automatic Lighting Controls in Dining Areas" has been recommended for implementation. "Decrease Dining Area Illuminance" will be done with the recommended ECO "Replace Ballasts and Decrease Illuminance in Dining Area." "Replace Interior Incandescent Fixtures" was not recommended because the post is currently replacing all interior incandescent fixtures with compact fluorescent. "Install Insulating Glass/Panels" has not been recommended because of a negative energy savings brought on by a decrease in the passive solar heating of the building. Refer to Table 1-9 for the rejected ECOs.

TABLE 1-9 ENERGY CONSERVATION OPTIONS EVALUATED, BUT REJECTED
(SIR < 1)

Title	Bldg. No.	Cost ($) Constr. Plus SIOH	Electric Savings MBTU/YR	Nat. Gas Savings MBTU/YR	Total Savings MBTU/YR	Dollar Savings $/YR	Savings Invsmt. Ratio	Simple Payback Period
Decrease dining area illuminance	6250	450	43	0	43	498	13.81	0.89
Decrease dining area illuminance	1117	439	43	0	43	503	12.20	0.83
Decrease dining area illuminance	1040	549	50	0	50	585	11.33	0.89
Decrease dining area illuminance	1369	549	50	0	50	585	11.33	0.89
Revise manual lighting controls	2061	4,039	231	0	231	2,703	7.13	1.42
Decrease dining area illuminance	9612	701	28	0	28	328	4.98	2.04
Revise manual lighting controls	1369	1,834	50	0	50	585	3.40	2.98
Revise manual lighting controls	1040	1,834	50	0	50	585	3.40	2.98
Revise manual lighting controls	1669	1,834	35	0	35	410	2.38	4.26
Replace interior incandescent fixtures	1117	7,370	98	0	98	1,147	1.66	6.11
Replace interior incandescent fixtures	1040	3,120	31	0	31	363	1.24	8.18
Replace interior incandescent fixtures	1369	3,120	31	0	31	363	1.24	8.18
Replace interior incandescent fixtures	1669	3,120	31	0	31	363	1.24	8.18
Replace interior incandescent fixtures	6250	4,029	31	0	31	367	1.18	10.43
Elec. ballasts and auto. ltg. control	2061	25,650	179	0	179	2,094	1.05	11.65
Replace interior incandescent fixtures	2461	10,398	68	0	68	796	0.99	12.43
Replace ballasts w/electronic type	1369	9,672	77	0	77	901	0.99	10.21
Replace ballasts w/electronic type	9612	4,194	32	0	32	374	0.95	10.66
Replace ballasts w/electronic type	6250	15,629	90	0	90	1,053	0.87	14.12
Replace interior incandescent fixtures	2061	9,865	67	0	67	784	0.85	11.97
Replace ballasts w/electronic type	1040	9,672	66	0	66	772	0.85	11.91
Replace ballasts w/energy saving type	2061	22,327	151	0	151	1,767	0.84	12.02
Replace ballasts w/energy saving type	9612	3,289	21	0	21	246	0.80	12.73
Reclaim heat from waste water	2461	19,975	0	209	209	941	0.79	49.67
Dec. illum., elec. ballasts and auto. lgt. control	9612	4,843	25	0	25	293	0.78	15.75
Replace ballasts w/energy saving type	2461	8,476	37	0	37	433	0.66	18.62
Replace ballasts w/electronic type	1117	8,916	47	0	47	550	0.66	15.42
Replace ballasts w/energy saving type	6250	11,486	46	0	46	538	0.60	20.30
Replace ballasts w/energy saving type	1369	8,612	40	0	40	468	0.58	17.50
Replace ballasts w/energy saving type	1040	8,584	34	0	34	398	0.49	20.53
Replace ballasts w/energy saving type	1669	6,846	25	0	25	296	0.46	22.00
Elec. ballasts and auto. lgt. control	1117	10,167	27	0	27	316	0.40	30.62
Elec. ballasts and auto. lgt. control	1669	9,427	25	0	25	293	0.40	30.66
Add insulation to walls	1040	17,283	0	15	15	68	0.38	35.48
Replace ballasts w/energy saving type	1117	7,986	24	0	24	281	0.37	27.05
Dec. illum., elec. ballasts and auto. lgt. control	1040	9,756	20	0	20	234	0.31	39.66

TABLE 1-9 (Continued)

Title	Bldg. No.	Cost ($) Constr. Plus SIOH	Electric Savings MBTU/YR	Nat. Gas Savings MBTU/YR	Total Savings MBTU/YR	Dollar Savings $/YR	Savings Invsmt. Ratio	Simple Payback Period
Dec. illum., elec. ballasts and auto. lgt. control	1369	9,756	20	0	20	234	0.31	39.66
Elec. ballasts and auto. lgt. control	2461	11,882	23	0	23	269	0.29	42.00
Retrofit multizone to VAV system	2461	114,313	63	220	283	1,732	0.28	62.78
Add insulation to roof	1040	25,199	0	10	10	45	0.24	54.54
Retrofit multizone to VAV system	2061	104,631	49	121	170	1,120	0.18	88.85
Dec. illum., elec. ballasts and auto. lgt. control	6250	15,824	19	0	19	222	0.18	67.71
Install insulating glass/panels	1040	11,039	0	-10	-10	-45	N/A	N/A

N/A - Not Applicable

1.5.4. Energy Conservation Investment Program Projects Developed. No ECOs meeting the criteria for Energy Conservation Investment Program (ECIP) have been identified at the eight dining halls.

1.5.5. Non-ECIP Projects Developed. One project containing 45 ECOs was developed as directed by the Post Energy Officer. Refer to Table 1-10 for a listing of the individual ECOs with this project. As a single project, these ECOs have an SIR of 2.55 and a 5.12 year payback period. The funding source being sought for this project is FORSCOM - U. S. Army Forces Command.

TABLE 1-10 FORSCOM PROJECT/ECO LISTING

Title	Bldg. No.	Cost ($) Constr. Plus SIOH	Electric Savings MBTU/YR	Nat. Gas Savings MBTU/YR	Total Savings MBTU/YR	Dollar Savings $/YR	Savings Invsmt. Ratio	Simple Payback Period
Lower domestic hot water temperature	6250	24	0	13	13	57	59.71	0.38
Install water flow restrictors	1117	556	0	171	171	768	39.34	0.50
Lower domestic hot water temperature	1117	24	0	6	6	28	29.86	0.76
Install water flow restrictors	2061	1,298	0	258	258	1,159	26.83	0.71
Lower domestic hot water temperature	2461	24	0	5	5	22	23.52	0.96
Install water flow restrictors	1369	865	0	113	113	508	20.55	0.85
Automatic lighting controls in dining area	2061	1,604	231	0	231	2,703	17.94	0.56
Install water flow restrictors	2461	1,792	0	235	235	1,059	17.23	1.12
Lower domestic hot water temperature	2061	24	0	4	4	16	17.15	1.32
Install water flow restrictors	1040	865	0	91	91	407	16.47	1.06
Install water flow restrictors	1669	865	0	84	84	378	15.29	1.14
Install water flow restrictors	9612	371	0	22	22	97	9.15	1.90
Insulate steam condensate piping	1117	1,817	0	127	127	570	7.48	3.03
Insulate steam condensate piping	1040	114	0	8	8	36	7.43	3.06
Install water flow restrictors	6250	1,545	0	87	87	391	7.21	2.72
Automatic lighting controls in dining area	1040	1,140	50	0	50	585	5.46	1.85
Automatic lighting controls in dining area	1369	1,140	50	0	50	585	5.46	1.85
Remove unused incandescent fixtures	2461	1,342	42	0	42	491	4.73	2.60
Automatic lighting controls in dining area	6250	1,459	44	0	44	511	4.52	2.71
Automatic lighting controls in dining area	9612	1,689	53	0	53	620	3.91	2.59
Automatic lighting controls in dining area	1669	1,140	35	0	35	410	3.83	2.65
Insulate domestic hot water tank	9612	855	0	25	25	111	3.10	7.32
Replace mercury vapor downlights	2461	3,203	63	0	63	737	2.97	4.13
Automatic lighting controls in dining area	2461	1,302	25	0	25	293	2.90	4.23
Automatic lighting controls in dining area	1117	3,364	75	0	75	878	2.78	3.65
Replace ballasts and decrease illuminance in dining area	9612	3,155	47	0	47	550	1.86	5.46
Replace ballasts and decrease illuminance in dining area	1369	8,616	123	0	123	1,439	1.78	5.69
Replace ballasts and decrease illuminance in dining area	1040	8,616	104	0	104	1,217	1.50	6.74
Insulate domestic hot water piping	9612	308	0	4	4	17	1.35	16.82
Insulate domestic hot water piping	1040	206	0	3	3	12	1.34	16.87
Replace ballasts and decrease illuminance in dining area	6250	14,365	116	0	116	1,357	1.22	10.07
Replace ballasts and decrease illuminance in dining area	1117	6,804	65	0	65	761	1.19	8.51
Replace ballasts w/electronic type	2061	24,866	230	0	230	2,691	1.15	8.79
Automatic exterior lighting controls	2061	2,077	19	0	19	222	1.14	8.89
Replace ballasts w/electronic type	2461	10,580	69	0	69	807	0.99	12.47
Automatic exterior lighting controls	2461	1,548	9	0	9	105	0.88	13.98
Replace exterior incandescent fixtures	1369	1,431	10	0	10	117	0.87	11.64
Replace exterior incandescent fixtures	1669	1,431	10	0	10	117	0.87	11.64
Replace exterior incandescent fixtures	1040	1,431	10	0	10	117	0.87	11.64
Replace exterior incandescent fixtures	2061	4,039	24	0	24	281	0.74	13.68
Replace ballasts w/electronic type	1669	8,287	47	0	47	553	0.71	14.24
Replace exterior incandescent fixtures	2461	1,346	6	0	6	70	0.67	18.24
Automatic exterior lighting controls	1040	1,391	7	0	7	78	0.63	15.98
Automatic exterior lighting controls	1369	1,467	7	0	7	78	0.57	17.81
Automatic exterior lighting controls	1669	1,467	7	0	7	78	0.57	17.81
TOTAL OF ALL OF THE ABOVE		131,853	1,578	1,256		24,272	2.55	5.12

(8003-2)

1.5.6. **Operational and/or Policy Change Recommendations.** These changes are recommended.

1.5.6.1. Maintain HVAC equipment in good repair.

1.5.6.2. The dining halls are not individually metered. Installing meters at each of the buildings would allow energy consumption to be monitored and analyzed better.

1.5.6.3. Label single door exits directly to exterior "Emergency Exit Only" to enforce use at existing vestibules for entering or leaving the building.

1.5.6.4. Turn unused lights off - both interior and exterior.

1.6. ENERGY AND COST SAVINGS.

1.6.1. **Total Potential Energy and Cost Savings.** If all 45 recommended ECOs for the eight dining halls are implemented, the post can reduce the energy consumption at the eight dining halls by 18 percent with a corresponding annual dollar savings of $18,085.00. Refer to Table 1-11 for a listing of energy consumption before and after the ECOs are implemented.

TABLE 1-11 BEFORE AND AFTER ENERGY CONSUMPTION

A. ELECTRICITY

Bldg No.	Current Consumption BTU/YR x 10^6	Projected Consumption BTU/YR x 10^6	Percent Reduction %	Savings BTU/YR x 10^6	Savings $/YR
1040	313.8	179.1	43	134.7	1,579
1117	190.9	96.1	50	94.8	1,111
1369	313.8	179.2	43	134.6	1,578
1669	313.8	189.4	40	124.4	1,458
2061	1,063.0	803.0	25	260.0	3,047
2461	966.5	596.1	38	370.4	4,341
6250	301.2	181.8	40	119.4	1,399
9612	72.8	32.1	56	40.7	477
TOTAL	3,535.8	2,256.8	36	1,279.0	14,990

TABLE 1-11 (Continued)

B. NATURAL GAS

Bldg No.	Current Consumption BTU/YR x 10^6	Projected Consumption BTU/YR x 10^6	Percent Reduction %	Savings BTU/YR x 10^6	Savings $/YR
1040	1,272.0	1,176.0	8	96.0	432
1117	329.3	244.5	26	84.8	382
1369	1,366.0	1,241.0	9	125.0	563
1669	1,245.0	1,155.0	7	90.0	405
2061	1,029.0	850.4	17	178.6	804
2461	935.1	836.9	11	98.2	442
6250	1,101.0	1,100.0	-	1.0	5
9612	213.4	199.6	7	13.8	62
TOTAL	7,490.8	6,803.4	9	687.4	3,095

C. TOTAL ENERGY (Electricity and Natural Gas)

Bldg No.	Current Consumption BTU/YR x 10^6	Projected Consumption BTU/YR x 10^6	Percent Reduction %	Savings BTU/YR x 10^6	Savings $/YR
1040	1,585.1	1,355.1	15	230.7	2,011
1117	520.2	340.6	35	179.6	1,493
1369	1,679.8	1,420.2	16	259.6	2,141
1669	1,558.8	1,344.4	14	214.4	1,863
2061	2,092.0	1,653.4	21	438.6	3,851
2461	1,901.6	1,433.0	25	468.6	4,783
6250	1,402.2	1,281.8	9	120.4	1,404
9612	286.2	231.7	19	54.5	539
TOTAL	11,026.6	9,060.2	18	1,966.4	18,085

1.7. ENERGY PLAN. As a result of the energy study on the eight dining halls at Fort Carson, a project has been developed which will reduce the energy consumption at the post. Refer to Table 1-10 for the recommended ECOs contained in the project.

1.7.1. ECIP Projects. No ECIP projects were developed in this study.

1.7.2. Non-ECIP Projects. A single project containing 45 ECOs was created. The funding being sought for this single project is FORSCOM - U. S. Army Forces Command. No projects have been prepared for the Productivity Enhancing Capital Investment Program (PECIP), for the Quick Return and Investment Program (QRIP), for the Office of the Security of Defense Productivity Investment Funding (OSD PIF), or for any low cost/no cost projects.